

Claims

1. A balanced antenna for connecting to a balanced power amplifier stage in a portable communications device, the balanced power amplifier stage having first and second outputs, the antenna comprising a ground plane and first and second antenna elements spaced apart from each other and from the ground plane, wherein the antenna elements are arranged to be opposite one another and each of the antenna elements has a feed point connectable to one of the outputs from the power amplifier stage.

2. A balanced antenna according to claim 1, wherein the elements are substantially identical and one element is reversed with respect to the other so that the radiation patterns superpose.

3. A balanced antenna according to claim 1, wherein the feed points of the antenna elements are arranged at opposite sides of the antenna arrangement.

4. A balanced antenna according to claim 1, wherein the first and second antenna elements comprise conductive plates.

5. A balanced antenna according to claim 1, wherein the portable communications device includes a printed circuit board and the ground plane comprises the printed circuit board.

6. A balanced antenna according to claim 1, wherein the antenna elements are substantially perpendicular to the ground plane.

7. A balanced antenna according to claim 1, wherein the space between the antenna elements comprises air.

8. A balanced antenna according to claim 1, wherein the antenna elements are substantially parallel to the ground plane.

9. A balanced antenna according to claim 8, wherein the space between the antenna elements comprises a dielectric material.

10. A balanced antenna according to claim 9, wherein the dielectric material has a high dielectric constant.

11. A balanced antenna according to claim 10, wherein the dielectric constant is greater than about 8.

12. A balanced antenna according to claim 1, further comprising a floating ground between the ground plane and the antenna elements.

13. A balanced antenna according to claim 12, wherein the floating ground comprises a conductive plate which is electrically isolated from the ground plane.

14. A balanced antenna according to claim 13, wherein the conductive plate is spaced apart from the ground plane by a dielectric support.

15. A mobile telephone including a balanced antenna according to claim 1.

16. A portable communications device comprising a circuit board having a plurality of electronic components mounted thereon and a balanced antenna, the balanced antenna comprising first and second substantially parallel antenna elements mounted to the board, each of the antenna elements having a top edge and a bottom edge, the bottom edge being nearer the board than the top edge, the device further comprising a ground plane disposed between the bottom edge of the antenna elements and the board, the ground plane being electrically isolated from the antenna elements and the board.

17. A balanced antenna for a portable communications device, comprising a ground plane and first and second substantially similar antenna elements spaced from the ground plane, the first and second elements being substantially parallel to

the ground plane and being aligned in opposite directions with respect to one another.

18. A method of manufacturing a balanced antenna for connecting to a balanced power amplifier stage in a portable communications device, the balanced power amplifier stage having first and second outputs, the antenna comprising a ground plane and first and second antenna elements spaced apart from each other and from the ground plane, wherein the antenna elements are arranged to be opposite one another and to overlap to a predetermined extent, and each of the antenna elements has a feed point connectable to one of the outputs from the power amplifier stage, the method comprising varying the extent to which the antenna elements overlap to tune the antenna for use in a predetermined frequency band.

Add A17

AI
Concl -

11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100